

International Exchange
 Future of Waste Management
 Industry, Operators and Research

UPDATE!



W A S T E - T O - E N E R G Y

O C T O B E R 1 4 A N D 1 5, 2 0 1 9 | V I E N N A

INTERNATIONAL DEVELOPMENT

EU Policies and Development
 Country Reports
 Strategies

WASTE INCINERATION

Municipal Solid Waste
 Sewage Sludge
 Hazardous Waste
 Technologies of Waste Incineration
 Energy Efficiency and Use
 Boiler Cleaning
 Experience with Materials and Corrosion
 Flue Gas Treatment
 CO₂ Capture
 Processing and Utilization
 of Incineration Bottom Ash

**ALTERNATIVE
 WASTE-TO-ENERGY PROCESSES**

Mechanical-Biological Treatment
 Utilization of Solid Recovered Fuels
 Pyrolysis and Gasification

SCIENTIFIC CHAIR

**Professor Dipl.-Ing. Dr. techn.
 Franz Winter**

Vienna University of Technology,
 Institute of Chemical, Environmental &
 Biological Engineering, Austria

**Professor Ing.
 Dagmar Juchelková, Ph. D.**

Technical University of Ostrava (VŠB-TUO),
 Energy Engineering Department, Czech Republic



S P O N S O R S



www.IRRC-Waste-to-Energy.com

Programme Coordination

Dr.-Ing. Stephanie Thiel, Scientific Director of Thomé-Kozmiensky Verlag GmbH, Germany

Congress Organisation

Elisabeth Thomé-Kozmiensky, M.Sc., Managing Director of Thomé-Kozmiensky Verlag GmbH, Germany

Steering Committee

Associate Professor Dr.-Ing. Lale Andreas

Luleå University of Technology, Department of Civil, Environmental and Natural Resources Engineering, Waste Science & Technology, Sweden

Professor Dr.-Ing. Michael Beckmann

Technical University Dresden, Director of the Institute of Process Engineering and Environmental Technology, Germany

Patrick Clerens

Secretary General, European Suppliers of Waste to Energy Technology (ESWET), Belgium

Professor Dr. Ertugrul Erdin

Dokuz Eylül Üniversitesi Mühendislik Fakültesi, Çevre Mühendisliği Bölümü, Buca-Izmir, Turkey

Dipl.-Ing. Thomas Feilenreiter

Managing Director of Steinmüller Babcock Environment GmbH, Germany

Professor Dr.-Ing. Martin Kranert

University of Stuttgart, Chair of Waste Management and Emissions, Germany

Professor Dr. Rundong Li

Shenyang Aerospace University, Director for Institute of Clean Energy & Environmental Engineering (ICEEE), China

Professor Dipl.-Ing. Dr. techn. Karl E. Lorber

University of Leoben, Waste Processing Technology and Waste Management, Austria

Dr.-Ing. Reinhard Maaß

RM Strategie & Kommunikation, Germany

Dipl.-Ing. Ulrich Martin

Managing Director of Martin GmbH für Umwelt- und Energietechnik, Germany

Dipl.-Phys. Karl-Heinz Müller

Chief Operating Officer of EEW Energy from Waste GmbH, Germany

Adj. Professor Dr.-Ing. habil. Abdallah Nassour

University of Rostock, Chair of Waste and Resource Management, Germany

Professor Dr. Rodrigo Navia

University of La Frontera, Department of Chemical Engineering, Chile

Professor Ph.D. Eur. Ing. Dr.-Ing. habil. Tadeusz Pajak

University of Science and Technology AGH Kraków, Department of Power Systems and Environment, Poland

Assistant Professor Ing. Martin Pavlas, Ph.D.

Brno University of Technology, Institute of Process and Environmental Engineering, Czech Republic

Dipl.-Chem.-Ing. Luciano Pelloni

Waste Management Advice, Switzerland

Professor Dipl.-Ing. Dr. mont. Roland Pomberger

University of Leoben, Chair of Waste Processing Technology and Waste Management, Austria

Professor Constantinos S. Psomopoulos, Ph.D

Piraeus University of Applied Sciences, Director of the Electric Power Division and High Voltage Lab, Greece

Professor Dr.-Ing. Peter Quicker

RWTH Aachen, Unit of Technology of Fuels, Germany

Professor Dipl.-Ing. Dr. techn. Harald Raupenstrauch

University of Leoben, Chair of Thermal Processing Technology, Austria

Professor Dipl.-Ing. Dr. techn. Helmut Rechberger

Vienna University of Technology, Institute of Water Quality, Resources and Waste Management, Austria

Professor Dr.-Ing. Wolfgang Rommel

Managing Director of bifa Umweltinstitut GmbH, Augsburg, Germany

Professor Dr.-Ing. Vera Susanne Rotter

Technical University Berlin, Chair of Solid Waste Management, Germany

Dipl.-Ing. Dr. mont. Renato Sarc

University of Leoben, Waste Processing Technology and Waste Management, Austria

Dr.-Ing. Frank Schumacher

Managing Director of Zweckverband RBB Restmüllheizkraftwerk Böblingen, Germany

Professor Ing. Ph.D. Ľubomír Šooš

Slovak University of Technology in Bratislava, Director of the Institute of Manufacturing Systems, Environmental Technology and Quality Management, Slovakia

Professor Dr.-Ing. habil. Dr. h.c. Petr Stehlik

Brno University of Technology, Director of the Institute of Process Engineering, Czech Republic

Dr. Ella Stengler

Managing Director of CEWEP – Confederation of European Waste-to-Energy Plants e.V., Belgium

Associate Professor Dr. Pál Szentannai

Budapest University of Technology and Economics (BME), Deputy Head of Department of Energy Engineering, Hungary

Professor Dr.-Ing. Oktay Tabasaran

Istanbul, Turkey and Stuttgart, Germany

Professor Nickolas J. Themelis

Director of the Earth Engineering Center, Columbia University
Chairman of WTERT Waste-to-Energy Research and Technology Council, New York, United States

Dr. ir. Robert van Kessel

Operating Agent, Prewin network, Ughelen, Netherlands

Dr. Costas A. Velis

Lecturer in Resource Efficiency Systems, University of Leeds, Institute for Public Health and Environmental Engineering, United Kingdom

Dipl.-Masch.-Ing. Thomas Vollmeier

President of TBF + Partner AG Consulting Engineers, Zurich, Switzerland, Chairman of IRF International Recovery Foundation

Associate Professor Dr. Sc. Patrik Yrjas, Senior Researcher

Laboratory of Inorganic Chemistry, Åbo Akademi Johan Gadolin Process Chemistry Centre, Finland

Dipl.-Ing. Klaus-Günther Zink

Directeur Général Adjoint/Secteur Environnement, CNIM S.A., La Seyne-sur-Mer CEDEX, France

Plenary Session

9:00 Welcome Address

Professor Dipl.-Ing. Dr. techn. Franz Winter, Vienna University of Technology, Austria
Professor Ph.D. Ing. Dagmar Juchelková, Technical University of Ostrava, Czech Republic

Opening Remarks

Elisabeth Thomé-Kozmiensky, M.Sc.

EU Policies and Legislation

PRESENTATION: PROFESSOR DR. FRANZ WINTER

9:15 Waste-to-Energy Roadmap Towards 2035

p. 3

Dr. Ella Stengler, Managing Director
CEWEP – Confederation of European Waste-to-Energy Plants e.V., Brussels, Belgium

9:45 Final Version of the Reviewed Best Available Techniques Reference Document (BREF) p. 27 for Waste Incineration and Steps Towards Implementing BAT Conclusions in the EU Member States

Dipl.-Ing. Markus Gleis, Scientific Senior Councilor
German Environment Agency, Dessau-Roßlau, Germany

10:15 Coffee Break

Country Reports

PRESENTATION: DR. ELLA STENGLER, MARK DÖING

10:45 Waste Management Situation and Perspectives in the United Kingdom Against the Background of Brexit

p. 87

Chris Jonas, Director of Tolvik Consulting Ltd, Cam, Gloucestershire, United Kingdom

11:00 Implementation of Circular Economy and Waste Incineration BREF in Italy – Current Status and Perspectives –

Lorenzo Zaniboni, Technical Director
A2A Ambiente S.p.A., Brescia, Italy

11:15 Albania – the First Balkan Country with an Incineration Plant

p. 107

Lulzim Baumann, Albania and Technical University Berlin

11:30 Waste-to-Energy Potential and a New Market in Turkey

p. 119

Professor Dr. Nuri Azbar
Ege University, Izmir, Turkey

11:45 Waste Management Scenario in India and Progress in the Field of Waste-to-Energy p. 129

Dr. Sunil Kumar, Head Technology Development Centre
Principal Scientist, Solid and Hazardous Waste Management Division
Coordinator, Academy of Scientific and Innovative Research (AcSIR)
CSIR – National Environmental Engineering Research Institute (CSIR-NEERI)
WTERT India, Secretary, Nagpur, Maharashtra, India

12:00 Future Development of Waste Management in China According to the Current Five-Year Plan

Professor Dr. Rundong Li, Dean of the Faculty of Energy and Environment, Dr. Bingshuo Li
Shenyang Aerospace University, China

12:15 Panel Discussion

13:00 Lunch Break

– After lunch break, the event will take place in two sessions – please see the next page –

October 14, 2019

Strategic Projects

PRESENTATION: DR.-ING. STEPHANIE THIEL

- ▶ **14:30 Operation of Three Waste-to-Energy Plants in Paris – Experience of a Major European Municipal Solid Waste Public Authority and Outlook on Strategic Development Projects –** p. 71
Frederic Roux, Directeur des Usines de Traitement
Syctom, l'agence métropolitaine des déchets ménagers, Paris, France
- ▶ **15:00 Belgrade Public-Private Partnership – How the Private Sector Helps in Converting Belgrade Dumpsite into an Integrated Waste Management Facility** p. 61
Philippe Thiel, Suez, Belgrade, Serbia
- ▶ **15:30 Size Matters: The Construction of the World's Largest Waste-to-Energy Plant in Dubai** p. 179
Andres Kronenberg, Chief Business Development
Hitachi Zosen Inova AG, Zurich, Switzerland

▶ **16:00 Coffee Break**

PRESENTATION: PROFESSOR DIPL.-ING. DR. MONT. ROLAND POMBERGER

- ▶ **16:30 How Plants Can Be Adapted for the Future – A Case Study from Södertälje, Sweden, and Beyond –**
Dr.-Ing. Ingo Zorbach, Head of Product Development
Steinmüller Babcock Environment GmbH, Gummersbach, Germany
- ▶ **17:00 Methanol Production at Waste to Energy Plants** p. 329
Christian Schweitzer
Managing Director of bse Engineering Leipzig GmbH, Germany
- ▶ **17:30 Flying Beverage Buffet**
- ▶ **19:00 Dinner**

Strategic Topics

PRESENTATION: PROFESSOR PH. D. ING. DAGMAR JUCHELKOVÁ

- ▶ **14:30 Do We Need Pre-Treatment or Refuse Derived Fuel for Energy-from-Waste?** p. 449
Christophe Cord'homme, Director Marketing and Communication
CNIM Secteur Environnement & Energie, Paris, France
- ▶ **15:00 Global Warming Impacts from Incineration Including Carbon Dioxide Capture and Utilisation**
Professor Dr. agr., Ph.D. Thomas Højlund Christensen
Department of Environmental Engineering
Technical University of Denmark, Kongens Lyngby, Denmark
- ▶ **15:30 Opportunities for CO₂ Capture in the Waste-to-Energy Sector** p. 319
Mario Ditaranto, Senior Researcher
SINTEF Energi AS, Thermal Energy Department, Trondheim, Norway
- ▶ **16:00 Coffee Break**

PRESENTATION: PROFESSOR DR.-ING. KARL E. LORBER

- ▶ **16:30 Sustainable Solutions for the Thermal Treatment of Sewage Sludge – Visualized by the Showcase Bitterfeld** p. 481
Dr. Matthias Mann, Head Technology
Küttner Martin Technology GmbH, Munich, Germany
- ▶ **17:00 Status Quo, Management and Planning of Sewage Sludge Treatment Plants in Kuwait / the Gulf States** p. 491
Dipl.-Ing. Manfred Graf, Head Project Management
EVN Umweltholding und Betriebs-GmbH, Maria Enzersdorf, Austria
- ▶ **17:30 Flying Beverage Buffet**
- ▶ **19:00 Dinner**

Incineration

PRESENTATION: DIPL.-ING. KLAUS-GÜNTHER ZINK

- ▶ **8:30 Realizing a Waste-to-Energy Project – How to Start** p. 41
Dipl.-Masch.-Ing. Thomas Vollmeier, President of the Governing Board,
Member of the Management Board, TBF + Partner AG, Zurich, Switzerland
- ▶ **9:00 Typical Project Structures in the Waste-to-Energy Business** p. 49
– EPC, EPCM, BOT, BOOT and PPP/PFI –
Attorney Dr. Tobias Faber
Hogan Lovells International LLP, Frankfurt am Main, Germany
- ▶ **Copenhill – a Showcase for Technology, Environment, and Integration with the City –** p. 169
Jacob Hartvig Simonsen
Direktør of ARC – I/S Amager Ressourcecenter, Copenhagen, Denmark **(only book)**
- ▶ **9:30 Eco-Indicators for Municipal Waste Management of Istanbul: A Historical Perspective** p. 143
Professor Dr. Bestamin Özkaya
Yildiz Technical University, Department of Environmental Engineering, Istanbul, Turkey
- ▶ **10:00 Waste Management Situation in Beijing** p. 153
Professor Junfu Lyu
Professor Hairui Yang, Professor Man Zhang
Tsinghua University, Beijing, China
- ▶ **10:30 Coffee Break**

Performance and Energy Efficiency

PRESENTATION: ASS. PROFESSOR DIPL.-ING. DR. TECHN. JOHANN FELLNER

- ▶ **11:00 Engineered Solutions for the Tuning of Existing Waste-to-Energy Plants** p. 195
Dr. rer. nat. Ing. Oliver Gohlke, Technology Director
Dublix Technology ApS, Gentofte, Denmark
- ▶ **11:30 Upscaling Combustion Grates – Technical Challenges** p. 207
Dr. Tom Croymans, Innovation Manager
Ing. Peter Van De Moortel
Keppel Seghers Belgium NV, Willebroek, Belgium
- ▶ **12:00 Analyzing the Optimization Potential of Steam Production in Waste-to-Energy: Examples by Evaluating Data from Three Different Plants*** p. 277
Dr. rer. nat. Therese Schwarzböck, Ass. Professor Dipl.-Ing. Dr. techn. Johann Fellner,
Professor Dipl.-Ing. Dr. techn. Helmut Rechberger
Institute for Water Quality and Resource Management
Vienna University of Technology, Austria
- ▶ **12:30 Lunch Break**

PRESENTATION: PATRICK CLERENS

- ▶ **14:00 Operating Experience with Plants with High Steam Parameters** p. 241
Dipl.-Ing. Michael Mück, Leiter Prozesstechnik
Steinmüller Babcock Environment GmbH, Gummersbach, Germany
- ▶ **14:30 A Vision for Waste-to-Energy in 2050: Clean Technologies for Sustainable Development** p. 15
Patrick Clerens, Secretary General
European Suppliers of Waste to Energy Technology (ESWET), Brussels, Belgium
- ▶ **15:00 SimWasteCity – a Dynamic Simulation Tool for Urban Waste Incineration Concepts**
Professor Dipl.-Ing. Dr. techn. Franz Winter, Olexiy Butbayev
Vienna University of Technology, Austria
- ▶ **16:00 Final Coffee Break**

* peer reviewed paper

October 15, 2019

Materials and Corrosion/Fouling

PRESENTATION: DR. RER. NAT. WOLFGANG SPIEGEL / ASSOCIATE PROFESSOR DR. SC. PATRIK YRJAS

- ▶ **8:30 Fouling Textures and Micro-Milieus Determine High Temperature Chlorine Corrosion in Power Plants Fired with Waste or Biomass** p. 551
Dr. rer. nat. Wolfgang Spiegel, Managing Director, Dipl.-Ing. Marie Kaiser,
Dipl.-Geol. Werner Schmid
CheMin GmbH, Augsburg, Germany
- ▶ **9:00 Corrosion in Recycled Wood Combustion – Theory and Solutions** p. 561
Hanna Kinnunen, Combustibility & Corrosion Specialist
Valmet Technologies Oy, Finland
- ▶ **9:30 System Stability of a Boiler Tile System – a Matter of the Greatest Importance** p. 575
Jos van der Hoeff
Managing Director of Van der Hoeff Refractories BV, Limmen, The Netherlands
- ▶ **10:00 Operation and Use of Sulphur Burner** p. 587
M.Eng. Rupert Warlo, Dr.-Ing. Sascha Krüger
IBK-Verfahrenstechnik, Bad Berka, Germany
- ▶ **10:30 Coffee Break**

PRESENTATION: DR. IR. ROBERT VAN KESSEL

- ▶ **11:00 Innovative Process Experience for Simultaneous Acid Gases Removal and Slagging/Fouling Reduction in Waste-to-Energy Boilers** p. 603
Giorgio Cassamagnaghi, Product Manager R&D
Unicalce Spa, Lecco, Italy

Boiler Cleaning

- ▶ **11:30 Pressure Wave Cleaning Service which Increases Safety and Efficiency of Operating Waste-to-Energy Plants**
BSc. Eng. Marc Keusch, Dipl.-Ing. Markus Bürgin, Managing Director
Bang&Clean, Othmarsingen, Switzerland
- ▶ **12:00 Closing the Loop – Online Cleaning via Real-time Performance Monitoring and Boiler Condition Monitoring via 3D Scanning**
Fred Wanschers, Director
On-line cleaning, The Netherlands
- ▶ **12:30 Lunch Break**

PRESENTATION: ASSOCIATE PROFESSOR DR. PAL SZENTANNAI

- ▶ **14:00 Fuel-Specific On-Load Boiler Cleaning Solutions for WtE Plants** p. 217
B.Sc. Mark Barnes, Senior Sales Manager
Clyde Bergemann Power Group Europe, United Kingdom
Dipl.-Ing. Manfred Frach
Sales Manager of CBEU Sales & Marketing, Authorised Officer
Clyde Bergemann GmbH, Wesel, Germany

IT and Digitalisation

- ▶ **14:30 Engineering Model Development with Artificial Intelligence** p. 289
Dr.-Ing. Martin Horeni
solutions-ahead Schweiz GmbH, Zurich, Switzerland
- ▶ **15:00 Dynamic Plant Simulator – a Virtual Reality Twin to Model WtE Plant Behaviour and to Train Operators** p. 305
Antoni Regnier, R&D Engineer
Dr. Philippe Cattieuw, Director Engineering
CNIM S.A., La-Seyne-sur-Mer, France
- ▶ **16:00 Final Coffee Break**

October 15, 2019

Mechanical(-Biological) Waste Treatment and Energy Recovery from Solid Recovered Fuels

PRESENTATION: DIPL.-ING. DR. MONT. RENATO SARC

- 8:30 **Overview of Best Available Techniques for Mechanical Biological Treatment of Residual Municipal Solid Waste** p. 397

Dr.-Ing. Ling He, Dipl.-Ing. Wolfgang Butz
German Environment Agency, Dessau-Roßlau, Germany

- 9:00 **Grain Size Dependent Distribution of Contaminants in Coarse-Shredded Commercial Waste *** p. 413

Sandra Viczek, M.Sc. M.Sc., Dipl.-Ing. Dr. mont. Renato Sarc,
Professor Dipl.-Ing. Dr. mont. Roland Pomberger
University of Leoben, Austria

- 9:30 **Integrated Waste-to-Energy in Albania – The Municipal Solid Waste Project in Tirana** p. 431

Fabrizio Strobino
Managing Director of Paul Wurth Energy SRL, Genova, Italy

Pyrolysis and Gasification

PRESENTATION: DIPL.-ING. MARKUS GLEIS

- 10:00 **Efficiency and Performance Assessment of Waste-to-Energy Melting Gasification in Relation to the EU Waste Framework Directive** p. 371

Dr. Andrew N. Rollinson, School of Architecture, Building and Civil Engineering
University of Loughborough, Leicestershire, United Kingdom

- 10:30 **Coffee Break**

- 11:00 **Evaluation of Recent Developments Regarding Alternative Thermal Waste Treatment with a Focus on Depolymerisation Processes** p. 361

Professor Dr.-Ing. Peter Quicker, RWTH University Aachen, Germany
Dr.-Ing. Martin Pohl, President
ENVERUM Ingenieurges. für Energie- und Umweltverfahrenstechnik mbH, Dresden, Germany

- Evaluation on Physical and Chemical Properties of Aviation Biofuels from Corn Straw Oil by Hydrothermal Liquefaction Based on Chemical-Biological Pretreatment** p. 383

Dr. Bingshuo Li, Jian Wang, Professor Tianhua Yang, Professor Dr. Rundong Li,
Weidan Wang, Yinghui Xie
Shenyang Aerospace University, China (only book)

Flue Gas Treatment

- 11:30 **Complying with the New EU NO_x Emission Standards – Combining Advanced SNCR Technologies –** p. 623

Dipl.-Ing. Bernd von der Heide
Chief Executive Officer of Mehldau & Steinfath Umwelttechnik GmbH, Essen, Germany

- 12:00 **Integrated Technology for NO_x and Dioxine Removal Inside WtE and Biomass Boilers**

Pierre Le Coz, CNIM / LAB SA, La Seyne Sur Mer, France

- 12:30 **Lunch Break**

PRESENTATION: PROFESSOR DIPL.-ING. DR. TECHN. KARL E. LORBER

- 14:00 **Improving the SO₂ and HCl Removal Efficiency by 30 % in Existing Dry Flue Gas Cleaning without any Capital Investment – On-Site Observations and Results on Latest Developments –** p. 653

Stéphane Crevecoeur, Market Manager, Flue Gas Cleaning
Carmeuse Group, Louvain-la-Neuve, Belgium

- 14:30 **Different Industries – Different Technologies? – Sea Water Scrubbing for Power Plants and Cruise Ships –** p. 665

Dipl.-Ing. Frank Spöhrer, Sales Manager, LAB GmbH, Stuttgart, Germany
Jérôme Giralt, Sales & Marketing, LAB S.A., Lyon, France

- 15:00 **Continuous Mercury Emission and Process Monitoring** p. 683

Dr. Michael Boness, Strategic Industry Manager Waste & Recycling / GIC Process Automation
SICK AG, Überlingen, Germany

- 15:30 **Mercury Separation by Chemisorption – A View from Industry and Science** p. 699

Dr.-Ing. Wolfgang Esser-Schmittmann
Managing Director of Carbon Service & Consulting GmbH & Co. KG, Vettweiß, Germany
Jonas Moritz Ambrosy, M.Sc.
University Duisburg, Germany

- 16:00 **Final Coffee Break**

* peer reviewed paper

October 15, 2019

Sewage Sludge

PRESENTATION: PROFESSOR DR.-ING. PETER QUICKER

- ▶ **8:30 Up-to-Date Approach for Thermal and Material Treatment of Sludge** p. 469
Dipl.-Ing. Jan Krispin, Managing Director
EVECO Brno, s.r.o., Brno, Czech Republic
- ▶ **9:00 Possibilities to Integrate Sewage Sludge Incineration into Municipal Solid Waste Incineration Facilities** p. 503
Dr.-Ing. Wolfgang Schüttenhelm
Managing Director of WS Management & Engineering UG, Wiehl, Germany
- ▶ **9:30 Solutions of Sewage Sludge Mono Combustion with an Integrated Rotary Kiln in an Existing Waste to Energy Plant** p. 517
Dr. Bernhard Zimmermann
Dr. Martin Ehmman, Dipl.-Ing. Alexander Simon
Mitsubishi Hitachi Power Systems Europe GmbH, Duisburg, Germany
- ▶ **10:00 Flue Gas Treatment for Sewage Sludge Incinerators – Concepts and First Results from Plants in Operation** p. 531
Dipl.-Ing. Rüdiger Margraf, Managing Director
Dipl.-Ing. Dirk Band, Managing Director
LUEHR FILTER GmbH, Stadthagen, Germany
- ▶ **10:30 Coffee Break**

Hazardous and Clinical Waste

PRESENTATION: PROFESSOR DIPL.-ING. DR. TECHN. HELMUT RECHBERGER

- ▶ **11:00 Combustion of Persistent Organic Pollutants (POPs) in the Hazardous Waste Incineration Plant in Izmit** p. 343
Dr. Şahan Dede, Incineration Plant Manager
IZAYDAŞ, Izmit / Kocaeli, Turkey
- ▶ **11:30 Medical Waste Management in Developing Countries** p. 351
Salman Zafar
CEO of BioEnergy Consult, Uttar Pradesh, India

Incineration Residues

- ▶ **12:00 Utilisation of Incinerator Bottom Ash and Respective Legal Requirements in the EU, Norway and Switzerland *** p. 715
B.Sc. Dominik Blasenbauer, Dipl.-Ing. Florian Huber
Institute for Water Quality and Resource Management
Vienna University of Technology, Austria
- ▶ **12:30 Lunch Break**

PRESENTATION: PROFESSOR DR. RER. NAT. FRANZ-GEORG SIMON

- ▶ **14:00 Utilisation of Incineration Bottom Ash in Road Constructions** p. 715
Ing. Ph.D. Jiri Hyks
Danish Waste Solutions ApS, Horsholm, Denmark
- ▶ **14:30 Metals and Minerals: Opportunities for Improved Recovery from Dry-discharged Bottom Ash** p. 743
Dr.-Ing. Ralf Koralewska, Research & Development
Martin GmbH für Umwelt- und Energietechnik, Munich, Germany
Associate Professor Dr. Athanasios Bourtsalas
Earth Engineering Centre, Columbia University, New York, United States
- ▶ **15:00 Metal Composition in Waste Combustion Ashes and their Recovery** p. 755
Professor Ph.D. Jorma Jokiniemi
Director of Fine Particle and Aerosol Technology Laboratory
University of Eastern Finland (UEF), Kuopio, Finland
- ▶ **15:30 Fly Ash as a Material for Thermochemical Energy and CO₂ Storage** p. 767
Dipl.-Ing. Saman J. Setoodeh
Professor Dipl.-Ing. Dr. techn. Franz Winter
Institute of Chemical, Environmental and Bioscience Engineering
Vienna University of Technology, Austria
- ▶ **16:00 Final Coffee Break**

* peer reviewed paper

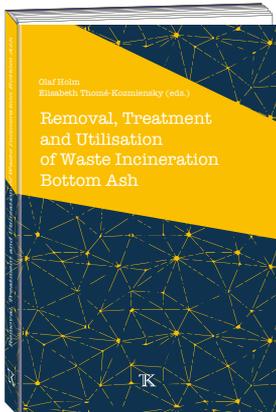
Books

- ▶ **2011: Waste Management, Volume 2**
+ CD (includes translations in Polish and German)
Price: 50.00 EUR
- ▶ **2012: Waste Management, Volume 3**
+ CD (includes translations in various languages)
Price: 50.00 EUR
- ▶ **2014: Waste Management, Volume 4**
Price: 50.00 EUR
- ▶ **2015: Waste Management, Volume 5**
Price: 90.00 EUR
- ▶ **2016: Waste Management, Volume 6**
Price: 90.00 EUR
- ▶ **2017: Waste Management, Volume 7**
Price: 120.00 EUR
- ▶ **2018: Waste Management, Volume 8**
Price: 120.00 EUR

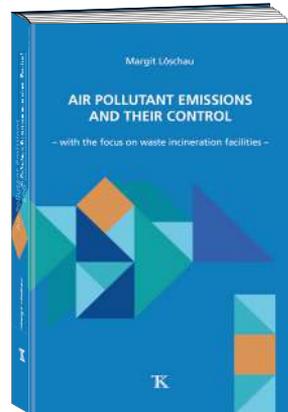


Package Price
395.00 EUR
 save 175.00 EUR
 Waste Management
 Volume 2 – 8
 CD Waste Management
 Volume 2 and 3

Waste Management, Volume 9
Release: October 14, 2019
 Price: 120.00 EUR



Removal, Treatment and Utilisation of Waste Incineration Bottom Ash
 published: 2018
 Price: 75.00 EUR



Air Pollutant Emissions and their Control
 – with the focus on waste incineration facilities –
 published: 2017
 Price: 120.00 EUR

Book Order Form to order@vivis.de

I hereby place a binding order for

Quantity	Title of the book

Name / First Name / Title

Company / Organisation

Department

Address

Post Code / City / Country

Phone / Fax

Email

I will pay the amount after receiving my invoice.

Date, signature

- With the order you acknowledge the terms and conditions (AGB) of Thomé-Kozmiensky Verlag GmbH as binding and you agree that your data will be processed and used in accordance with our privacy policy, which is visible on www.vivis.de *
 * **Your approval is mandatory for processing your order**

Seminar on Carbon Capture and Utilisation (CCU)

Basics • Best Practice
Lighthouse Projects
Vivid Exchange of Information

The event takes place in HOTEL SAVOYEN VIENNA. The seminar is held with international experts from Carbon Capture and Utilisation. Every aspect from preparation to product finishing will be covered by the most prominent representatives of this young but promising industry which is more frequently requested to implement regulatory requirements on one hand, but also offers improvements in altering business models and economics of waste incinerators on the other hand. A special focus is laid upon CO₂ to methanol as an economical promising and industrial available technology.

Following five main sections will be pursued:

1. General Introduction with Legal and Technological Overview
2. Best Practice CO₂ Capture from the flue gas
 - Mobile Test Unit since 2009, including Klemetsrud WtE in Oslo, Norway
 - Twence Waste-to-Energy Plant in Hengelo, Netherlands
3. Best Practice CO₂ Utilization
 - Business Case and market development for Waste Incinerators
 - Flexible CO₂ to methanol synthesis
 - Pre-Basic Engineering ZASt plant, Germany
4. Hydrogen Supply for CCU
 - Best Practice
 - State of the Art Alkaline Electrolysis on pressure level of methanol synthesis
5. Development CCUS project at Waste Incinerators in Fredrikstad, Norway

PRESENTATION: DIPL.-ING. MARKUS GLEIS

- ▶ **9:15 Perspectives and challenges for building the CCU industry in Europe**
Damien Dallemagne, Secretary General
CO₂ Value Europe AISBL, Brussels, Belgium
- ▶ **10:00 CO₂ Markets and CCU Technologies**
Achim Raschka, Head of Technology & Markets Department
nova-Institut für politische und ökologische Innovation GmbH, Hürth, Germany
- ▶ **10:45 CO₂ to Methanol Synthesis and Catalyst**
Christian Schweitzer, Managing Director
bse Engineering Leipzig GmbH and tbn from BASF, Leipzig, Germany
- ▶ **11:45 Innovative Modular Carbon Capture Plants for Waste Incineration Industry**
Oscar Graff, Vice President, Head of CCUS
Jon Christopher Knudsen, Vice President, Global Business Development
Aker Solutions AS, Lysaker, Norway
- ▶ **12:30 Lunch Break**
- ▶ **13:15 Best Practice Electricity Usage for CCU**
Christopher Braatz, Business Development Manager
McPhy Energy Deutschland GmbH, Wildau, Germany
- ▶ **14:00 CCUS Feasibility Study**
Rune Dirdal, Managing Director
Kvitebjørn Bio-EI AS, Fredrikstad, Norway

Plant Tour to Waste Treatment Plants in Vienna

On October 16, 2019 we offer a tour to selected waste treatment plants in and around Vienna. Delegates of the IRRC Waste-to-Energy have the possibility to participate in that excursion. Registered participants will receive a guided tour at each site.

Schedule

- ▶ **08:15 Get together in the hotel lobby**
- ▶ **08:30 Departure by bus**
- ▶ **09:00 Visit Pfaffenu**
Waste Incineration Plant
and Biogas Plant
- ▶ **11:00 Visit Simmeringer Haide**
Waste Incineration Plant
- ▶ **12:30 Tour ends**
- ▶ **13:00 Arrival in hotel**



Congress Venue

HOTEL SAVOYEN VIENNA

Austria Trend Hotel Savoyen Vienna

Rennweg 16, 1030 Vienna, Austria

Phone: +43 (1) 206 33-0

Internet: austria-trend.at

Single room for IRRC delegates:

180 EUR per night (including breakfast)



Please **book your room** directly with the hotel. The Savoyen Vienna offers a limited number of rooms at a special rate until July 22, 2019:

<http://austria-trend.at/book/IRRC>.

You will be directed to a page of the Hotel Savoyen Vienna, dedicated to the delegates of the IRRC 2019 for the room allotment.

Be aware that Vienna is a very popular city for conferences, trade fairs and similar big events. Make sure to book your overnight stay in sufficient time.

Sponsoring, Exhibition and Advertising

Companies as Sponsors for the IRRC

Sponsoring companies can engage in the IRRC with a contribution of 6,500.00 EUR plus VAT. The grant is used to further increase the quality of the event. The financial contribution entitles the sponsoring companies to the following services:

- sponsoring companies are displayed on the **invitations for the evening event**,
- two full-page **advertisements in the book** Waste Management, which is released at the congress, and in our online literature database,
- a **company stand** in the congress area (alternatively a free ticket for a member of the company),
- the company **logo** is displayed in the **congress flyer**, given that the confirmation is provided before the flyer goes to press,
- the company **logo and a link** to the company's homepage are displayed on the TK-Verlag-homepage, www.vivis.de
- the company **logo** is displayed in the PowerPoint-**presentations**, which are shown **during the breaks**,
- information material of the sponsoring companies can be enclosed to the congress proceedings.



Advertisement in the IRRC-Book Waste Management and in our online literature database

The book contains about 40 English articles, which are basically identical with the presentations at the IRRC – Waste-to-Energy.

The book will also be marketed after the congress. It is addressed to decision makers, managers and experts in the new EU member states and those countries that want to become active in these regions.

The hardcover and four-colour printed book will have a content of about 600 pages. Online literature database: In addition, three month later all articles will be published in our online literature database at www.vivis.de for free downloads. The full-page advertisements will also be integrated with a link to the homepage of the advertising companies. One advertisement costs 2,500.00 EUR.

Company presentation with an information stand at the IRRC on October 14 and 15, 2019

The company stands are located near the meeting rooms. One table and two chairs are provided for each company stand. Moreover, self-standing information boards or roll-up banners with a total width of at most 2 meters can be set up. The regular fee is 2,500.00 EUR.

Partners



Deutsche Gesellschaft für Abfallwirtschaft e.V.



DER JURISTISCHE VERLAG

lexxion

BERLIN
BRÜSSEL



Conditions of Participation and Services

Congress fees

- 890,- EUR** Regular fee for participants from the EU-15 and EFTA countries, and overseas
- 450,- EUR** Reduced fee for participants from other EU-member states or from low and middle income economies
- 390,- EUR** Reduced fee for full-time professionals of regulatory authorities or universities
- 100,- EUR** Reduced fee for full-time students

Low Middle Income Economies: We include all those countries into this category that are defined as low & middle income economies by the World Bank.

Students Please Note: With regard to the reduced registration fee students are defined as those without a permanent employment (at an organization or a university), those with only marginal employment or a comparable low scholarship.

Visa Letter: A letter of invitation can be provided upon request for the registered congress participants. Please contact the Organizing Committee, if you require an invitation letter.

The congress fee comprises: Attendance at all presentations; Coffee breaks and luncheons for both days; Networking dinner on October 14, 2019; Congress documents: 1 book, proof-of-entry, final programme, list of speakers and participants.

If you are unable to attend the congress, your registration can be delegated to a substitute person. Cancellation requests must be received in writing (email, post or fax) on or before the cancellation deadline. **Cancellations** received on or before **September 14, 2019** will receive a refund of the paid fees minus an administration fee of 50,- EUR. Cancellations received after the deadline will not be issued a refund. Any unpaid congress fees are due and payable to Thomé-Kozmiensky Verlag GmbH. Congress documents will be sent to registered attendees, who were unable to participate.

Complementary programme on October 16, 2019.

1. EXTRA-DAY on Carbon Capture and Utilisation (CCU)

Registration Fee

590,- EUR

Participants of the IRRC Waste-to-Energy that register for the seminar will get a **discount of** on the two registration fees.

The fee comprises: attendance at all presentations; coffee break and lunch; congress documents: final programme, list of speakers and participants

2. PLANT TOUR to waste treatment plants in Vienna (only for registered participants of the IRRC 2019)

40,- EUR Registration fee

Be aware that an additional 50,- EUR + VAT is payable and serves as a **security deposit**. If the registered person attends the tour (or cancels at least 48 hours prior to it), the payment will be returned.

The fee comprises: Pick up and return from the congress venue (approx. 9am to 3pm); Transportation between waste treatment sites; Guided tour at each site in English

Registration deadline: September 30, 2019.

Please note: There is a limited number of places!

Payment details: The registration fees are due before the start of the events. However, please wait with the payments until you have received your invoice. Write the invoice number and the name of the delegate legibly on the money transfer form.

– All prices are net prices. –

The legally applicable VAT will be shown separately on the invoice at the legal rate applicable.

Registration Form for the IRRC Waste-to-Energy and CCU-Seminar

Organised by:

Thomé-Kozmiensky Verlag GmbH
Dorfstraße 51 • 16816 Nietwerder • GERMANY
Phone +49.3391-45.45-0 • Fax +49.3391-45.45-10
Email: registration@vivis.de

I submit my binding application to attend the **IRRC Waste-to-Energy** on **October 14 and 15, 2019** in Vienna. I will pay the following registration fee in due time after receiving my invoice:

- 890,- EUR** regular fee **450,- EUR** reduced fee
 390,- EUR reduced fee **100,- EUR** student fee

I will attend the evening event on **October 14, 2019.**

Complementary programme on October 16, 2019

- 590,- EUR**
CCU-Seminar
(registered participants of the IRRC 2019 get a discount on the total fee)
- 40,- EUR (+ 50,- EUR deposit payment)**
Guided tour to waste treatment plants
(only for registered participants of the IRRC 2019).

I am interested in further information about

- sponsorship/advertising opportunities
 future conferences on waste management
- With the registration you acknowledge the terms and conditions (AGB) of Thomé-Kozmiensky Verlag GmbH as binding and you agree that your data will be processed and used in accordance with our privacy policy, which is visible on www.vivis.de.*

* Your approval is mandatory for participating at the event

Please tick interest points

- | | |
|--|--|
| <input type="checkbox"/> Incineration | <input type="checkbox"/> Materials and Corrosion/Fouling |
| <input type="checkbox"/> Boiler Cleaning | <input type="checkbox"/> IT and Digitalisation |
| <input type="checkbox"/> Mechanical(-Biological) Waste Treatment | |
| <input type="checkbox"/> Pyrolysis and Gasification | <input type="checkbox"/> Flue Gas Treatment |
| <input type="checkbox"/> Sewage Sludge | <input type="checkbox"/> Hazardous and Clinical Waste |
| <input type="checkbox"/> Incineration Residues | |

Name / First Name / Title

Company / Organisation

Department

Address

Post Code / City / Country

Phone / Fax

Email

Please tell us, if you have a different invoicing address. I have read and accept the terms and conditions indicated on this form.

Date, Signature